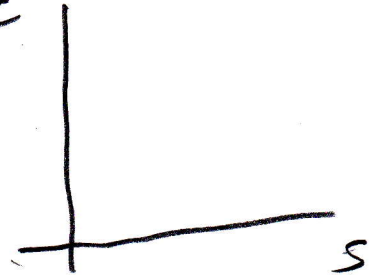


(43) No. calories burned in 1 hour is a function of the speed of a treadmill $C(S) = C$

The ordered pairs (S, C)

A person walking on treadmill at 2.5 mph burns ≈ 210 cal. $(2.5, 210)$

A person walking on treadmill at 6 mph burns ≈ 370 cal. $(6, 370)$



$$m = \frac{C_2 - C_1}{S_2 - S_1} = \frac{370 - 210}{6 - 2.5} = \frac{160}{3.5} \approx 45.7$$

Now write equation using PT. Slope Form
Choose one of the points

$$(6, 370) \quad y - y_1 = m(x - x_1)$$

$$C - C_1 = m(S - S_1)$$

$$C - 370 = 45.7(S - 6)$$

$$C - 370 = 45.7(S) - 45.7(6)$$

$$C - 370 = 45.7(S) - 274.2$$

$$C = 45.7(S) - 274.2 + 370$$

$$C = 45.7S + 95.8$$

$$C(S) = 45.7(S) + 95.8$$

$$= 228.5 + 95.8 = 324.3$$

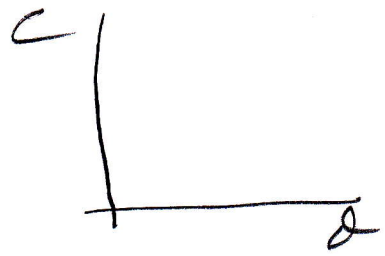
$$C(S) = 324.3 \text{ calories}$$

$$\begin{array}{r} 228.5 \\ 45.7 \\ \hline 324.3 \end{array}$$

44

5° ⇒ 525 cal

15° ⇒ 880 cal.



Let C = calories burned
d = degrees of incline

- (a) Find a linear function that fits the data.
- (b) Find the no. of calories burned in one hour on a treadmill going 4 mph and at a 9° incline

(5, 525) & (15, 880)
d₁ c₁ d₂ c₂

$m = \frac{c_2 - c_1}{d_2 - d_1} = \frac{880 - 525}{15 - 5} = \frac{355}{10} = \frac{\$ (71)}{10} = \frac{71}{10} = 35.5$

choose one of the points P.

$C - C_1 = m(d - d_1)$
 $C - 525 = 35.5(d - 5)$

$C - 525 = 35.5d - 35.5(5)$
 $C - 525 = 35.5d - 177.5$
 $C = 35.5d - 177.5 + 525$

$C = 35.5d + 347.5$ ✓

$$\begin{array}{r} 35.5 \\ \times 5 \\ \hline 177.5 \end{array}$$

$$\begin{array}{r} 525.0 \\ - 177.5 \\ \hline 347.5 \end{array}$$

(b)

$C = 35.5(9) + 347.5$
 $C = 319.5 + 347.5$
 $C = 667 \text{ calories}$ ✓

$$\begin{array}{r} 35.5 \\ \times 9 \\ \hline 319.5 \\ + 347.5 \\ \hline 667.0 \end{array}$$